



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,647	06/24/2005	Akihiko Okubora	09792909-6291	8882
26263      7590      04/10/2008 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, SEARS TOWER CHICAGO, IL 60606-1080				
EXAMINER KHAN, MEHMOOD B				
ART UNIT 2617		PAPER NUMBER		
MAIL DATE 04/10/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/540,647

**Applicant(s)**

OKUBORA, AKIHIKO

**Examiner**

MEHMOOD B. KHAN

**Art Unit**

2617

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3, 4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues on page 6 of the remarks that “Hsu fails to disclose anything relating to a system control unit effective to select a communication circuit which is configured to control the resonance frequency of the wireless communication antenna or a communication unit effective to continuously monitor a intensity of a assigned communication band and to deliver the intensity signal to a system control unit”.

The limitation “a system control unit effective to select a communication circuit” is not recited in the claim.

Hsu is not relied upon to disclose a communication unit effective to continuously monitor a [sic] intensity of a [sic] assigned communication band and to deliver the intensity signal to a system control unit.

Applicant argues on page 6 of the remarks that “Jackson, similarly, fails to disclose a system control unit effective to select a communication circuit which is configured to control the resonance frequency of the wireless communication antenna and a communication unit effective to continuously monitor a intensity of a assigned communication band and to deliver the intensity signal to a system control unit”.

The examiner respectfully disagrees. Jackson clearly discloses a bias circuitry which communicates with the tunable antenna (**Col 3: 41-47**). Please note that communication circuit is not recited in the amended claims.

Jackson is not relied upon for “a communication unit effective to continuously monitor a intensity of a assigned communication band and to deliver the intensity signal to a system control unit”.

Applicant argues on page 8 of the remarks that “Saunders, which fails to disclose a communication circuit effective to continuously monitor a intensity of an assigned communication band and to deliver the intensity signal to a system control unit”.

The examiner respectfully disagrees. Saunders clearly discloses a communication circuit effective to continuously monitor a intensity of an assigned communication band and to deliver the intensity signal to a system control unit (**Abstract, where Saunders clearly discloses a detector that monitors signal amplitude and system control unit is responsive to the detector**). Note that the term communication circuit is not recited anywhere in the amended claims.

#### ***Claim Objections***

2. Claim 4 is objected to because of the following informalities: Claim 4 recites “based on the the communication band” which should be changed to --based on the communication band--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 3, 4 and 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

Art Unit: 2617

was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 3 recites the limitation “a plurality communication unit each configured to control one of the plurality of switches”. The term communication unit only refers to commercialization in areas or LAN and PAN **(0014, where applicant states commercialization)**. Furthermore, applicant states that a system control unit controls the operation of switches **(0031, where applicant describes the roll of a system control unit)**.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3, 4 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 3 recites the limitation “resonance frequency of” in line 3 on page 3, which renders the claim indefinite since it is unclear as to resonance control frequency of what.

#### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US 6,417,807 herein Hsu) in view of Cohn et al. (US 7,276,789 herein Cohn).

Claim 1, Hsu discloses a wireless communication antenna (**see Abstract**), Hsu discloses a plurality of antenna element patterns connected through at least one Micro-Electromechanical Switch (MEMS) (**Col 4: 28-33, Col 4: 54-64, where Hsu discloses antenna elements and RF MEMS switches**), Hsu discloses on a base substrate (**Fig. 8: 110, where Hsu discloses a base substrate**), Hsu discloses wherein, each MEMS sealed in an accommodating space created by the base substrate and a cap substrate (**Fig. 8: 110, 120/130, where Hsu discloses MEMS between a base and cap substrate**), Hsu discloses each MEMS is effective to modify the wireless communication antenna resonance frequency by switching the connecting state of the antenna element patterns (**Col 1: 25-41, Fig. 2: 300, where Hsu discloses that it is well known to operate at a variety of frequencies and connection switches to couple antenna elements**).

Hsu does not disclose MEMS sealed in nitrogen.

In an analogous art, Cohn discloses MEMS sealed in nitrogen (**Col 4:: 39-42, where Cohn discloses filling the cavity with nitrogen**). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hsu with the teachings of Cohn so as to improve performance (**Col 4: 39-42**).

10. Claims 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US 6,417,807 herein Hsu) in view of Jackson et al. (US 6,061,025 herein Jackson) in view of Saunders et al. (GB 2354115A herein Saunders).

Claim 3, Hsu discloses a wireless communication apparatus comprising: a wireless communication antenna divided into a plurality of antenna element patterns on an antenna

board (Col 4: 28-33, where Hsu discloses antenna elements); Hsu discloses a plurality of switches formed on the antenna board (Col 4: 56-64, where Hsu discloses switches), Hsu discloses the switches are configured to change the resonance frequency of the antenna element (Col 1: 25-41, Fig. 2: 300, where Hsu discloses that it is well known to operate at a variety of frequencies and connection switches to couple antenna elements).

Hsu does not disclose a plurality of communication units each configured to control one of the plurality of switches, Jackson discloses a system control unit effective to select one of the communication units which is configured to control the wireless communication antenna resonance frequency of, wherein, the communication units are effective to continuously monitor an intensity signal of a unique communication band and to deliver the intensity signal to the system control unit, and the system control unit selects the communication unit which will configure the wireless communication antenna to operate at the desired resonance frequency based on the intensity signal received from the communication unit and a desired operational mode.

In an analogous art, Jackson disclose a plurality of communication units each configured to control one of the plurality of switches (Col 3: 41-45, where Jackson discloses biasing switching elements with a bias control circuitry and switches); Jackson discloses a system control unit effective to select one of the communication units which is configured to control the wireless communication antenna resonance frequency of (Col 3: 41-45, where a Jackson discloses a control system). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hsu with the teachings of Jackson so as to control the antenna to a desired frequency (Col 2: 22-26).

Hsu in view of Jackson does not disclose wherein, the communication units are effective to continuously monitor an intensity signal of a unique communication band and to

Art Unit: 2617

deliver the intensity signal to the system control unit, and the system control unit selects the communication unit which will configure the wireless communication antenna to operate at the desired resonance frequency based on the intensity signal received from the communication unit and a desired operational mode.

In an analogous art, Saunders discloses wherein, the communication units are effective to continuously monitor an intensity signal of a unique communication band and to deliver the intensity signal to the system control unit (**Abstract, where Saunders discloses where Saunders clearly discloses a detector that monitors signal amplitude and system control unit is responsive to the detector**), Saunders discloses the system control unit selects the communication unit which will configure the wireless communication antenna to operate at the desired resonance frequency based on the intensity signal received from the communication unit and a desired operational mode (**Page 10: 9-15, where Saunders discloses changing the frequency to a higher frequency**). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hsu in view of Jackson with the teachings of Saunders so as to improve the handling of the signal (**Page 5: 3-6**).

Claim 4, Hsu in view of Jackson does not disclose wherein the system control unit selects the communication unit which will configure the wireless communication antenna to the desired resonance frequency based on the [sic] the communication band associated with the selected operation mode.

In an analogous art, Saunders discloses wherein the system control unit selects the communication unit which will configure the wireless communication antenna to the desired resonance frequency based on the [sic] the communication band associated with the selected



operation mode (**Page 10: 9-20, where Saunders discloses operating at different frequencies**). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hsu in view of Jackson with the teachings of Saunders so as to improve the handling of the signal (**Page 5: 3-6**).

Claim 6, wherein the switch of the wireless communication antenna is comprised of MEMS switch element (**Col 3: 54-64, where Hsu discloses MEMS switches**), Hsu discloses and is buried in the antenna board comprised of multi-layer substrate (**Col 6: 48-65, where Hsu discloses substrates**).

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEHMOOD B. KHAN whose telephone number is (571)272-9277. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm. If attempts to

Art Unit: 2617

reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mehmood B. Khan/  
Examiner, Art Unit 2617

/Lester Kincaid/  
Supervisory Patent Examiner, Art Unit 2617